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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,225	08/06/2001	Stephen J. Plante	A0312/7410 WRM	8975

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EXAMINER

TORRES, JOSEPH D

ART UNIT PAPER NUMBER

2133

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/923,225	PLANTE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joseph D. Torres	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 7-17 and 19-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 18, 25 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Election/Restrictions***

1. This application contains claims 7-17 and 19-24 drawn to an invention nonelected with traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Drawings***

2. The drawings were received on 03/17/2005. These drawings are accepted.

### ***Response to Arguments***

3. Applicant's arguments with respect to the Prior Art rejections of claims 1-6, 18, 25 and 26 have been considered but are moot in view of the new ground(s) of rejection (see below).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amon; Yossi et al. (US 5742621 A, hereafter referred to as Amon) in view of Foland, Jr.; William R. (US 5412669 A).

35 U.S.C. 103(a) rejection of claims 1 and 18.

Amon teaches a processor (Figure 1 in Amon is a processor) comprising: a memory for storing instructions and operands for digital signal computations (see Program RAM and Instruction Cache 30 in Figure 1 of Amon); a program sequencer for generating instruction addresses for fetching selected ones of said instructions from said memory (DRAM and SRAM Bus Interface and Instruction Cache Control 42 of Amon); and a computation block (data arithmetic unit ALU 54 in Figures 1 and 2) comprising a register file for temporary storage of operands and results (Register File in Figure 2 of Amon) and an accelerator (Figure 3 in Amon is an algorithm for carrying out Add/Compare/Select functions in ALU 54 of Figures 1 and 2; hence is an accelerator) for executing a trellis instruction that specifies locations of trellis state metrics for a time  $t_0$  and transition metrics from time  $t_0$  to time  $t_1$ , said accelerator comprising an adder for

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adding a transition metric to a first state metric for time  $t_0$  to provide a first value (Step 109 in Figure 3 of Amon is an adder for adding a transition metric to a first state metric for time  $t_0$  to provide a first value) and an adder for subtracting the transition metric from a second state metric for time  $t_0$  to provide a second value (Step 108 in Figure 3 of Amon is an adder for subtracting the transition metric from a second state metric for time  $t_0$  to provide a second value), a comparator for determining the maximum of the corresponding first and second values for each trellis state (Step 110 in Figure 3 of Amon a comparator for determining the maximum of the corresponding first and second values for each trellis state) and a data selector for selecting the maximum of the corresponding first and second values for selected trellis states (Step 111 in Figure 3 of Amon is a data selector for selecting the maximum of the corresponding first and second values for selected trellis states).

However Amon does not explicitly teach the specific use of add, compare, and select process is accomplished in one cycle.

Foland, in an analogous art, teaches use of add, compare, and select process is accomplished in one cycle (see last sentence in abstract of Foland).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Amon with the teachings of Foland by including use of add, compare, and select process is accomplished in one cycle. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of add,

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compare, and select process is accomplished in one cycle would have provided increased processing speed (see last sentence in abstract of Foland).

5. Claims 2-6, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amon; Yossi et al. (US 5742621 A, hereafter referred to as Amon) and Foland, Jr.; William R. (US 5412669 A) in view of Benedetto et al. (S. Benedetto, D. Divsalar, G. Montorsi, and F. Pollara; Soft-Output Decoding Algorithms in Iterative Decoding of Turbo Codes; TDA Progress Report 42-124, February 15, 1996; hereafter referred to as Benedetto).

35 U.S.C. 103(a) rejection of claims 2-6, 25 and 26.

Amon and Foland substantially teaches the claimed invention described in claims 1 and 18 (as rejected above).

However Amon and Foland does not explicitly teach the specific use of a MAP decoder typically used in turbo decoding (Note: all of the elements in claims 2-6 are elements of MAP decoders for turbo decoders).

Benedetto, in an analogous art, teaches a MAP decoder typically used in turbo decoding. Note: MAP decoders require the use of Add/Compare/Select functions as taught in the appendix of Benedetto. One of ordinary skill in the art at the time the invention was made would have been highly motivated to use the Add/Compare/Select function as taught in Foland since as Foland teaches in the Abstract of Foland, the

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Add/Compare/Select function as taught in Foland reduces the number of clock cycles required for decoding hence accelerates the decoder.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Amon and Foland with the teachings of Benedetto by including use of the Add/Compare/Select function as taught in Foland with the MAP decoder taught in Benedetto. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of the Add/Compare/Select function as taught in Foland with the MAP decoder taught in Benedetto would have provided the opportunity to reduce the number of clock cycles required for decoding hence accelerating the decoder (see Abstract of Foland).

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

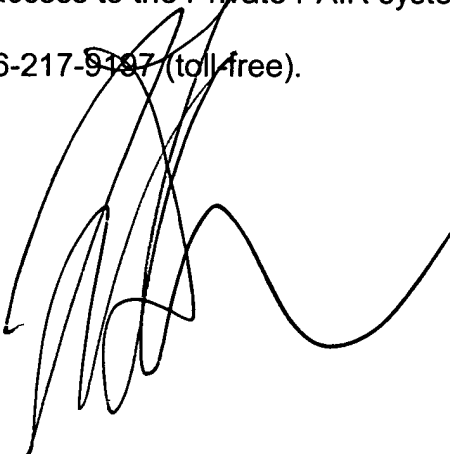
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).



Joseph D. Torres, PhD  
Primary Examiner  
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